PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416).
501129/JEP		
International Application No.	International Filing Date *(day/month/year)*	Priority Date *(day/month/year)*
PCT/AU03/00084	24 January 2003	25 January 2002

International Patent Classification (IPC) or national classification and IPC

Int. Cl. [7] C07K 16/28, C12N 5/20, A61K 39/395, A61P 37/02

Applicant

G2 THERAPIES LTD et al

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 4 sheets, including this cover sheet.

   ☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of sheet(s).

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of the report
1 July 2003	10 December 2003
Name and mailing address of the IPEA/AU	Authorized Officer
AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustralia.gov.au Facsimile No. (02) 6285 3929	**DAVID GRIFFITHS** Telephone No. (02) 6283 2628

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/AU03/00084

I. Basis of the report

1. With regard to the **elements** of the international application:*

[X] the international application as originally filed.

[ ] the description, pages , as originally filed,
pages , filed with the demand,
pages , received on with the letter of

[ ] the claims, pages , as originally filed,
pages , as amended (together with any statement) under Article 19,
pages , filed with the demand,
pages , received on with the letter of

[ ] the drawings, pages , as originally filed,
pages , filed with the demand,
pages , received on with the letter of

[ ] the sequence listing part of the description:
pages , as originally filed
pages , filed with the demand
pages , received on with the letter of

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language which is:

[ ] the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

[ ] the language of publication of the international application (under Rule 48.3(b)).

[ ] the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

[ ] contained in the international application in written form.

[X] filed together with the international application in computer readable form.

[ ] furnished subsequently to this Authority in written form.

[ ] furnished subsequently to this Authority in computer readable form.

[ ] The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

[X] The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

4. [ ] The amendments have resulted in the cancellation of:

[ ] the description, pages

[ ] the claims, Nos.

[ ] the drawings, sheets/fig.

5. [ ] This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* *Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).*

** *Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report*

V. **Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims **1 - 51**	**YES**
	Claims	**NO**
Inventive step (IS)	Claims **1 - 51**	**YES**
	Claims	**NO**
Industrial applicability (IA)	Claims **1 - 51**	**YES**
	Claims	**NO**

2. Citations and explanations (Rule 70.7)

C5aR comprises three extracellular loops, which are located at amino acids 95-110, amino acids 175-206 and amino acids 265-283. The present application has disclosed the production of three monoclonal antibodies, MAb 7F3, MAb 6C12 and MAb 12D4, which are each believed to bind to the second extracellular loop of C5aR (*i.e.* amino acids 175-206).

The following citations are considered in this report:

D1: FARKAS, I. *et al.* (1999) *NeuroReport* 10 (14), pages 3021-3025
D2: OPPERMANN, M. *et al.* (1993) *Journal of Immunology* 151 (7), pages 3785-3794
D3: WATANABE, H. *et al.* (1995) *Journal of Immunological Methods* 185 (1), pages 19-29
D4: FAYYAZI, A. *et al.* (2000) *Immunology* 99 (1), pages 38-45
D5: JAGELS, M. A. *et al.* (1996) *Infection and Immunity* 64 (6), pages 1984-1991
D6: SCHLAF, G. *et al.* (1999) *Laboratory Investigation* 79 (10), pages 1287-1297
D7: SAYAH, S. *et al.* (1999) *Journal of Neurochemistry* 72 (6), pages 2426-2436
D8: EP 0 377 489
D9: WO 95/00164
D10: ELSNER, J. *et al.* (1994) Blood 83 (11), pages 3324-3331

D1 discloses the monoclonal antibody C5aR 101-106 that was raised against amino acids 101-106 of Ca5R (corresponding to the first extracellular loop of C5aR). The citation indicates that this antibody is able to bind to C5aR even in the presence of C5a (Figure 1B, page 3023 column 2, paragraph 2), but there is no evidence that this results in reduced or inhibited binding of C5a to C5aR. The applicant argued that the data shows that exposure of cells that express C5aR to C5a does not affect the amount of staining by antibody C5aR 101-106 thus making it doubtful that any inhibition is taking place. The citation therefore does not disclose or suggest the specific antibodies of the present invention and the present claims must be acknowledged as being novel and inventive over the citation.

D2 discloses peptides corresponding to the three extracellular loops of C5aR (see Table I, peptides EX2, EX3 and EX4), and the production of polyclonal antibodies against these peptides. EX3 consists of amino acids 175-206 of C5aR (equivalent to the second extracellular domain). The citation indicates that antibodies raised against the extracellular loops do not inhibit C5a binding to C5aR, but rather antibodies against the N-terminal domain (EX1) inhibit the binding of C5a to C5aR (see page 3792, column 2, and the last paragraph on page 3793). The applicant has argued that this lack of inhibition implies that these antibodies would bind to different epitopes compared with the antibodies of the present invention, and therefore would not competitively inhibit the antibodies of the present invention. Therefore the present claims 6-9 are considered to be novel and inventive over D2. The remaining claims, which specifically define antibodies that reduce or inhibit the interaction between C5a and C5aR, are also considered to be novel and inventive over this citation.

continued on supplemental sheet ...

Supplemental Box
(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of V

D3 discloses the monoclonal antibody 4C8 that partially inhibits the binding of C5a to C5aR (see abstract). This document does not indicate what epitope the 4C8 antibody binds to, therefore the claims must be considered to be novel and inventive over this citation.

Documents D4-D10 all relate to antibodies against the N-terminal region of C5aR and are therefore not relevant to the present claims.

The claims meet the criterion of being industrially applicable.